

Considering Space Debris within the LCA framework

How could my work be transferred to users (policy/industry) ?

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MAURY Thibaut^{1,2}, LOUBET Philippe², DARIOL Ludovic¹, SONNEMANN Guido²

¹ ArianeGroup, Design for Environment, BP 20011, F-33165 St Médard en Jalles, France

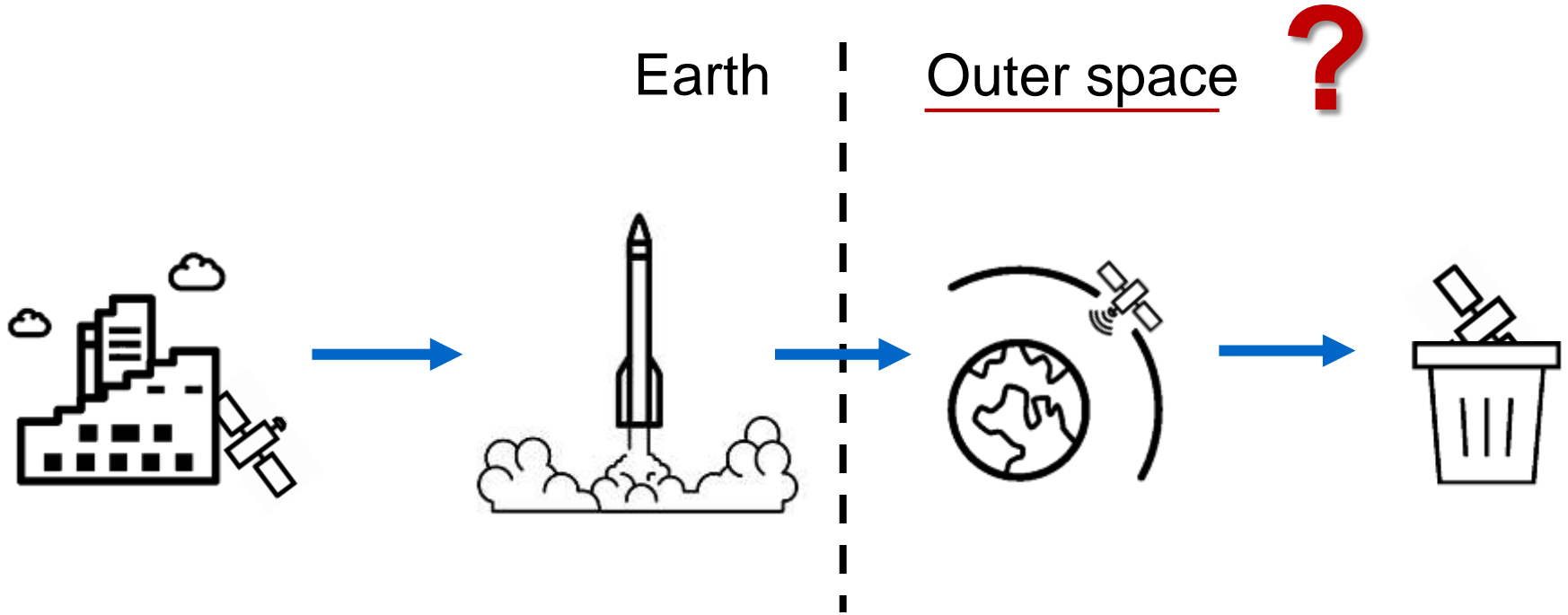
² CyVi, ISM, Univ. Bordeaux, UMR 5255, F-33400 Talence, France

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CONTEXT & OBJECTIVES OF THE PhD

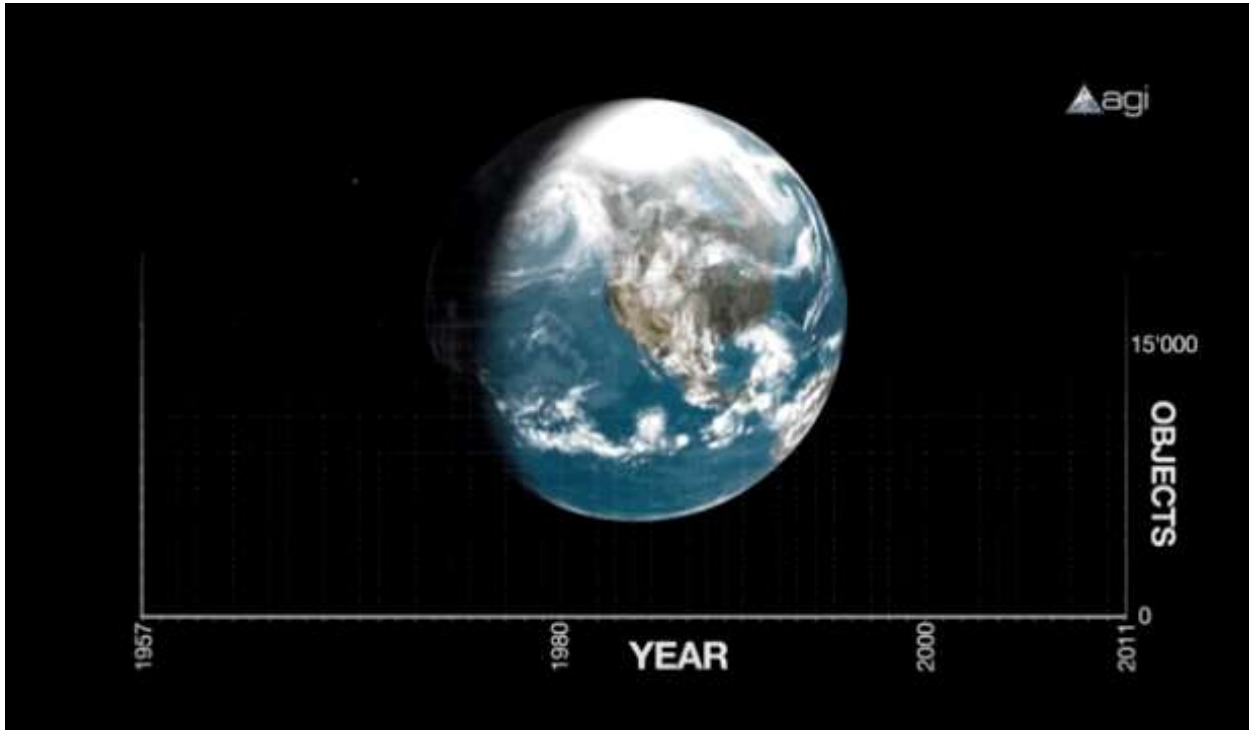


CONTEXT: LIFE CYCLE OF SPACE MISSIONS



CONTEXT: THE GROWING THREAT OF SPACE DEBRIS

Sustainability on both Earth and orbital environment



OBJECTIVES OF MY WORK

Make the link between eco-design and Space Debris via LCA methodology

Develop & implement an LCIA Indicator :

- Considering operational orbits as resources that can be depleted by the presence of space debris
- Comparing several post-mission disposal scenarios to study potential trade-offs



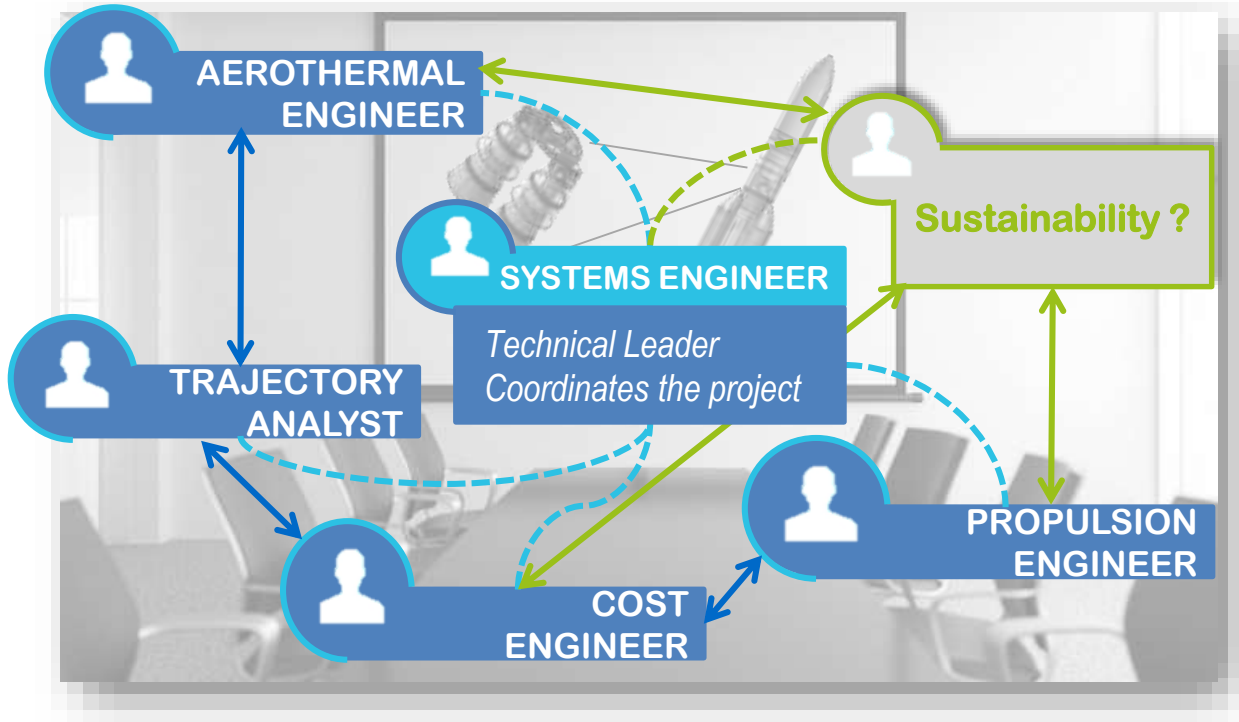
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TRANSFER TO SPACE INDUSTRY & POLICY MAKERS



DESIGN 'GREENER' SPACE MISSION

Including LCA approach within Concurrent Engineering Process
(early design)



Output: set of Eco-design Indicators to support the concurrent design



Thanks for your attention

✉ thibaut.maury@u-bordeaux.fr



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Towards the integration of orbital space use in Life Cycle Impact Assessment



Thibaut Maury^{a,b}, Philippe Loubet^{a,c,d}, Jonathan Ouziel^d, Maud Saint-Amand^d, Ludovic Dariol^d, Guido Sonnemann^{a,d,e}

^a CyVI group, ISM, Université de Bordeaux, UMR 5255, F-33400 Talence, France

^b Airbus Space Launchers, Design for Environment, BP 20011, F-33165 St Médard en Jallas, France

^c Bordeaux INP - ENSCM, ISM, UMR 5255, F-33007 Pessac, France

^d CNRS, ISM, UMR 5255, F-33400 Talence, France

HIGHLIGHTS

- Space debris is an increasing threat to the sustainability of space missions.
- Outer space use by human-related objects is not accounted for in LCA.
- We propose a new framework to consider orbital space as a resource in LCA.
- An impact pathway linking space mission inventory flows to potential impacts is proposed.

GRAPHICAL ABSTRACT

